

CLAIMS AMENDMENTS

What is claimed is:

1. (Currently amended) A laminated bearing composite shim having a laminate structure, the composite shim is non-extensible and has a central axis, the composite shim having an outer circumference and comprising a first non-extensible composite layer including a an epoxy matrix material and at least one spiral circumferential fiber that surrounds a portion of said first non-extensible composite layer with said at least one spiral circumferential fiber proximate said composite shim outer circumference, said spiral circumferential fiber in said epoxy matrix material of said first non-extensible composite layer of said non-extensible composite shim with said spiral circumferential fiber being oriented in a plane that is substantially perpendicular to said central axis.

2. (Previously presented) A laminated bearing composite shim according to Claim 1, wherein the laminate structure further comprises a second composite layer including a plurality of axial fibers, and wherein the first composite layer has a first side and a second side opposite the first side and the second composite layer has a first side and a second side opposite the first side, and wherein the first side of the first composite layer is laminated to the first side of the second composite layer.

3. (Previously presented) A laminated bearing composite shim according to Claim 2, wherein the laminate structure further comprises a third composite layer including at least one circumferential fiber with said third composite layer circumferential fiber proximate said composite shim outer circumference, and wherein the third composite layer is laminated to the second side of the second composite layer.

4. (Previously presented) A laminated bearing composite shim according to Claim 2, wherein the laminate structure further comprises a third composite layer including a plurality of axial fibers and wherein the third composite layer is laminated to

the second side of the first composite layer.

5. (Previously presented) A laminated bearing composite shim according to Claim 4, wherein the second composite layer comprises a plurality of laminated composite sublayers, and wherein the third composite layer comprises a plurality of laminated composite sublayers.

6. (Previously presented) A laminated bearing composite shim according to Claim 5, wherein the composite sublayers of the second and third composite layers include uniaxial fibers.

7. (Previously presented) A laminated bearing composite shim according to Claim 6, wherein the uniaxial fibers of each of the composite sublayers of the second and third composite layers are oriented along an axis defining an axis of each of the composite sublayers, and wherein the composite sublayers are arranged such that the axes of adjacent composite sublayers are offset by an angle.

8. (Previously presented) A laminated bearing composite shim according to Claim 7, wherein the second composite layer includes at least four composite sublayers, and wherein the third composite layer includes at least four composite sublayers.

9. (Previously presented) A laminated bearing composite shim according to Claim 8, wherein the four composite sublayers of the second composite layer are arranged such that their respective axes are in a 0° , $+45^\circ$, -45° , and 90° orientation, and wherein the four composite sublayers of the third composite layer are arranged such that their axes are in a 90° , -45° , $+45^\circ$, and 0° orientation.

10. (Previously presented) A laminated bearing composite shim according to Claim 4, wherein the second composite layer includes a layer selected from the group consisting of biaxial and triaxial woven cloth, and wherein the third composite layer comprises a layer selected from the group consisting of biaxial and triaxial woven cloth.

11. (Canceled)

12. (Canceled)

13. (Previously presented) A laminated bearing composite shim according to Claim 1, wherein the at least one circumferential fiber is selected from the group consisting of carbon, graphite, glass, aramid and boron.

14. (Previously presented) A laminated bearing composite shim according to Claim 1, wherein the composite shim has a thickness between about 0.01 inches to about 0.5 inches.

15. (Currently amended) A laminated bearing composite shim having a laminate structure, the laminated bearing composite shim is non-extensible and has an outer circumference, said non-extensible laminated bearing composite shim comprising a first non-extensible composite layer including at least one spiral circumferential fiber that surrounds a portion of said first non-extensible composite layer with said at least one spiral circumferential fiber proximate said composite shim outer circumference.

16. (Previously presented) A laminated bearing composite shim according to Claim 15, wherein the laminate structure further comprises a second composite layer laminated to the first composite layer, wherein the second composite layer includes a plurality of axial fibers.

17. (Previously presented) A laminated bearing composite shim according to Claim 16, wherein the second composite layer comprises a plurality of laminated composite sublayers.

18. (Previously presented) A laminated bearing composite shim according to Claim 15, wherein the first composite layer comprises a plurality of fibers that are concentrically oriented.

19. (Previously presented) A laminated bearing composite shim according to Claim 18, wherein the plurality of fibers that are concentrically oriented are arcuate shaped fibers.

20. (Previously presented) A laminated bearing composite shim according to Claim 19, wherein the plurality of arcuate shaped fibers form a plurality of circles oriented as concentric rings.

21. (Currently amended) A laminated bearing comprising:
a plurality of resilient layers; and
a plurality of non-extensible shims alternating with and laminated to the plurality of resilient layers, wherein at least one of the non-extensible shims is a composite shim having an outer circumference and a laminate structure comprising a first composite layer including at least one spiral circumferential fiber which surrounds a portion of said first composite layer with said at least one spiral circumferential fiber proximate said composite shim outer circumference.

22. (Previously presented) A laminated bearing according to Claim 21, wherein the composite shim having a laminate structure further comprises a second composite layer including a plurality of axial fibers, and wherein the first composite layer has a first side and a second side opposite the first side and the second composite layer has a first side and a second side opposite the first side, and wherein the first side of the first composite layer is laminated to the first side of the second composite layer.

23.(Original) A laminated bearing according to Claim 22, wherein the composite shim having a laminate structure further comprises a third composite layer including a plurality of axial fibers and wherein the third composite layer is laminated to the second side of the first composite layer.

24. (Original) A laminated bearing according to Claim 23, wherein the second composite layer comprises a plurality of laminated composite sublayers, and wherein the third composite layer comprises a plurality of laminated composite sublayers.

25. (Original) A laminated bearing according to Claim 24, wherein the composite sublayers of the second and third composite layers include uniaxial fibers.

26. (Original) A laminated bearing according to Claim 25, wherein the uniaxial fibers of each of the composite sublayers of the second and third composite layers are oriented along an axis defining an axis of each of the composite sublayers, and wherein the composite sublayers are arranged such that the axes of adjacent composite sublayers are offset by an angle.

27. (Original) A laminated bearing according to Claim 26, wherein the second composite layer includes at least four composite sublayers, and wherein the third composite layer includes at least four composite sublayers.

28. (Original) A laminated bearing according to Claim 27, wherein the four composite sublayers of the second composite layer are arranged such that their respective axes are in a 0°, +45°, -45°, and 90° orientation, and wherein the four composite sublayers of the third composite layer are arranged such that their axes are in a 90°, -45°, +45°, and 0° orientation.

29. (Original) A laminated bearing according to Claim 21, wherein the composite shim has a thickness between about 0.01 inches to about 0.5 inches.

30. (Currently amended) A laminated bearing non-extensible composite shim for use with a laminated bearing resilient layer, said non-extensible composite shim having an outer circumference and a laminate structure comprising a first composite layer including at least one spiral fiber that circumferentially surrounds a portion of the first composite layer with said at least one spiral fiber proximate said composite shim outer circumference.

31. (Currently amended) A laminated bearing non-extensible composite

shim according to Claim 30 wherein the at least one spiral fiber is a hoop wound fiber selected from the group consisting of carbon, graphite, glass, aramid and boron .

32. (Previously presented) A laminated bearing non-extensible composite shim according to Claim 30 wherein the first composite layer is comprised of a plurality of concentric fiber circles.

33. (Canceled)

34. (Previously presented) A laminated bearing non-extensible composite shim according to Claim 30 wherein the laminate structure further comprises a second composite layer including a plurality of axial fibers, and wherein the first composite layer is comprised of a plurality of concentric fiber circles.

35. (Previously presented) A laminated bearing non-extensible composite shim according to Claim 33 wherein the laminate structure includes a plurality of composite layers.

36. (Previously presented) A laminated bearing non-extensible composite shim according to claim 34 wherein the laminate structure includes a plurality of composite layers with axial fibers .

37. (Previously presented) A laminated bearing non-extensible composite shim according to Claim 33 wherein the laminate structure further comprises a second composite layer including a plurality of radial fibers.

38. (Previously presented) A laminated bearing non-extensible composite shim according to Claim 36 wherein the axial fibers of said composite layers are oriented at different angles .

39. (Previously presented) A laminated bearing non-extensible composite shim

according to Claim 30 further comprising at least one second composite layer comprising a plurality of radially extending fibers, and at least one third composite layer comprising a plurality of uniaxial fibers.

40. (Previously presented) A laminated bearing non-extensible composite shim according to Claim 38 wherein the shim includes a plurality of first, second and third composite layers.

41. (Previously presented) A laminated bearing non-extensible composite shim according to Claim 30 wherein the shim is frustoconical.

42. (Previously presented) A laminated bearing non-extensible composite shim according to Claim 30 wherein the shim is cylindrical.

43. (Previously presented) A laminated bearing non-extensible composite shim according to Claim 42 wherein the composite shim has a plurality of fibers surrounding a central axis.

44. (Previously presented) A laminated bearing non-extensible composite shim according to Claim 43 wherein the central axis is a longitudinal axis, the composite shim further comprising at least one longitudinal fiber and the at least one longitudinal fiber being oriented in the direction defined by the longitudinal axis.

45. (Previously presented) A laminated bearing non-extensible composite shim according to Claim 42 wherein the composite shim further comprises a plurality of circumferential fibers .

46. (Previously presented) A laminated bearing non-extensible composite shim according to Claim 44 wherein the composite shim further comprises at least one outer periphery lateral fiber.